WE CLAIM:

1. A method of forming a thermoactive binder composite product comprising the steps of:

selecting a gas permeable base material including a thermoactive binder component;

injecting a substantially dry hot gas into the base material, where the temperature of the gas is greater than the activation temperature of the thermoactive binder component of the base material.

2. The method of claim 1 further comprising the step of compressing the base material.

3. The method of claim 2 further comprising the step of timing the steps of injecting and compressing so that the gas is injected at least a portion of the time during which the base material is being compressed.

4. The method of claim 1 further comprising the step of choosing air as the substantially dry hot gas.

5. The method of claim 1 further comprising the step of forming the base material from thermoplastic pieces and cellulosic particles.

6. The method of claim 5 further comprising the step of choosing cellulosic particles with a maximum dimension of greater than one-eighth of an inch.

7. The method of claim 6 further comprising the step of choosing cellulosic particles with a maximum dimension of between one-quarter inch and six inches.

8. A method of forming a thermoactive binder composite product comprising the steps of:

choosing a base material including a thermoactive binder component ;

forming the base material into a mat having at least one surface expanse;

providing jet structure for delivering a pressurized hot non-condensable gas toward and into the base material through the surface expanse, the jet structure including a plurality of jets adapted to be disposed in a predetermined distribution over the surface expanse with the plurality of jets having an average opening size and being spaced apart in the predetermined distribution by an average distance substantially greater than the average opening size;

injecting, via the provided jet structure, the hot non-condensable gas into the base material, where the pressure of the gas is substantially dissipated in passage through the jets prior to entry into the base material at least during a portion of the step of injecting; and

pressing the base material to compress it to a first density.

9. The method of claim 8 further comprising the step of performing the steps of injecting and pressing in a first press, the step of performing the step of consolidating in a second press, and the step of transferring the base material from the first press to the second press during the steps of pressing and consolidating.

10. The method of claim 9 further comprising the step of selecting a second press with cooled platens.

11. The method of claim 8 further comprising the step of selecting a base material including filler particles.

12. The method of claim 11 further comprising the step of selecting filler particles generally in the form of strands.

13. The method of claim 11 further comprising the step of selecting filler particles from the group including sawdust, shredded paper, wood chips, wood shavings, peanut shells, glass fibers, boron fibers, or Kevlar™ fibers.

14. The method of claim 11 further comprising the step of preheating the thermoplastic portion of the base material prior to combination with the filler particles.

15. A method of forming a thermoactive binder composite product comprising the steps of:

supplying a base material including a thermoactive binder component;

providing a platen press with a pair of opposed platens to compress a press charge formed from the base material;

choosing platens having an insulating inner face for contacting the press charge to thereby substantially limit conductive heat transfer between the platens and the press charge;

injecting a hot dry gas into the press charge; and

compressing the press charge.

16. The method of claim 15 further comprising the step of choosing hot air as the hot gas for the step of injecting.

17. The method of claim 16 further comprising the step of heating the hot air to between 400 and 600°F prior to the step of injecting.

18. The method of claim 15 further comprising the step of choosing thermoplastic fluff as the thermoactive binder.

19. A method of forming a thermoactive binder composite product comprising the steps of:

selecting a gas permeable base material including a thermoactive binder component, where the gas permeability of the base material varies upon activation of the thermoactive binder;

injecting a substantially dry hot gas into the base material from a plurality of discrete locations, where the temperature of the gas is greater than the activation temperature of the thermoactive binder component of the base material;

regulating the gasflow among the plurality of discrete locations so that variations in the permeability of the base material in the proximity of one or more of the plurality of discrete locations does not substantially affect gasflow into the base material from one of the one or more discrete locations relative to another of the plurality of discrete locations.

20. A method of forming a thermoactive binder and cellulosic composite product comprising the steps of:

selecting a gas permeable base material including a thermoactive binder component and a cellulosic component;

injecting a substantially dry hot gas into the base material, where the temperature of the gas is greater than 400°F, where the gas comprises air; and

limiting the exposure of the base material to gas with a temperature greater than 400°F in step of injecting to avoid combustion.

21. The method of claim 20, further including the step of spiking the temperature for a predetermined interval when the gas is first injected into the mat.

22. The method of claim 20, further including the step of choosing a base material including thermoplastic fluff.

23. The method of claim 22, further including the step of forming the base material into a mat prior to the step of injecting and the step of compressing the mat to a first density of not more than fifteen pounds per cubic foot at least during part of the step of injecting so that the mat remains substantially porous.

24. A method of forming a thermoplastic composite product comprising the steps of:

choosing a base material including a thermoactive binder component;

forming the base material into a mat having at least one surface expanse;

providing jet structure for delivering a pressurized hot non-condensable gas toward and into the base material through the surface expanse, the jet structure including a plurality of jets adapted to be disposed in a predetermined distribution over the surface expanse with the plurality of jets having an average opening size and being spaced apart in the predetermined distribution by an average distance substantially greater than the average opening size;

injecting, via the provided jet structure, the hot non-condensable gas into the base material; and

choosing a small enough jet size, high enough gas pressure and low enough mat density so that the gas exiting the jets maintains a velocity coherence substantially into the mat from the jet where it is injected.

25. The method of claim 24, wherein the gas has a pressure of at least five psi and the mat has a density less than fifteen pounds per cubic foot, at least part of the time during the step of injecting.